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10/075,955	02/14/2002	William E. Coleman	2000068-0003	9848

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EXAMINER

EVANISKO, LESLIE J

ART UNIT	PAPER NUMBER
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2854

DATE MAILED: 06/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

10/075,955

Applicant(s)

COLEMAN ET AL.

Examiner

Leslie J. Evanisko

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 February 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other:

DETAILED ACTION

Claim Objections

1. Claims 8, 17 and 23 are objected to because of the following informalities: With respect to each of claims 17 and 23, there is no period at the end of the claim. This appears to be merely a typographical error. However, appropriate correction is required.

With respect to each of claims 8, 17, and 23, note that each claim is an improper dependent claim because it is merely reciting a mode of manufacture and fails to recite any additional structural limitation of the stencil. Note that steps of manufacture in apparatus claims fail to provide any additional structural limitation to the apparatus and therefore are not proper or patentably relevant.

Claim Rejections - 35 USC § 112

2. Claims 1-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claims 1 and 14, the scope of each claim is not clear, particularly with respect to whether the surface mount materials and surface are being positively recited in the claims. In particular, the claims are drawn to a stencil per se and not the combination of a stencil, surface mount materials,

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and surface. Therefore, it appears that applicant is intending to recite a stencil apparatus alone. However, applicant later recites in each claim that the “aperture delivers surface mount materials...to a surface” (emphasis added) and this language implies a positive structural connection between the aperture, the surface mount materials, and the surface. Furthermore, later dependent claims provide further limitations of the surface mount materials and the surface (see claims 6, 9, 15, and 18), making it appear that applicant is intending to recite the both the surface mount materials and the surface as part of the combination. Therefore, the scope of the claims is not clear.

In an effort to advance prosecution of the application, the Examiner has assumed that applicant is **not** intending to claim the surface mount materials or surface and that the claims are drawn to the stencil structure per se. If this is the case, note that claims 1 and 14 should be amended to use language such as the “aperture is *adapted to deliver* surface mount materials from said at least one reservoir pocket to a surface.” or similar language to insure it is clear that the surface mount materials and surface are not part of the claimed combination. Furthermore, note that claims 6, 9, 15, and 18 as currently written are improper dependent claims because they each fail to further limit their parent claim since they each fail to recite any further structural limitation of the stencil.

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However, if applicant is intending to recite the combination, it is suggested that claims 1-14 be amended to positively recite the combination of the stencil, surface mount materials, and surface.

Additionally note that the scope of claim 21 is also unclear since the claim is drawn to a stencil per se but has similar language reciting the “aperture draws solder material from the aperture...” Again, the dependent claims recite further limitations of the surface and the solder paste, thereby rendering the scope of claim 21 unclear.

Appropriate correction and/or clarification is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-9, 12-18, 21-23, and 26-28 are rejected under 35 U.S.C. 102(a) as being anticipated by Kayama et al. (JP 2001-199177). Kayama et al. teach a stencil for applying surface mount materials **70** comprising at least two layers **52, 80, 82**, the two layers including at least one reservoir pocket **52A, 54** and

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at least one delivery aperture **110** for delivering the surface mount materials to a surface **10**. See Figures 1-3 and the English language abstract/translation in particular.

With respect to claim 2, Kayama et al. teach at least one relief area **90** for providing clearance for preexisting components on the surface.

With respect to claim 3, note the upper layer (**52** or **80**) has at least one reservoir pocket (**52A** or **54**) and the lower layer **82** has at least one delivery aperture **110** and at least one relief area **90**.

With respect to claim 4, note the upper layer **80** has at least one reservoir pocket **54** and at least one relief area **90** and the lower layer has at least one delivery aperture **110** and at least one relief area **90** as recited.

With respect to claims 5 and 14, note the stencil in Figure 2 has three layers including reservoir pockets **52A**, **54**, relief areas **90**, and delivery apertures **110** as recited.

With respect to claims 6, 9, 15, and 18, to the extent the claims are properly further limiting the parent claim, note Kayama et al. teach the surface is a printed circuit board and the surface mount material is solder in the English language translation attached.

With respect to claims 7, 16, and 22, note Kayama et al. teach the stencil layers can be formed out of metal in paragraph 0022 of the English language translation.

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With respect to claims 8, 17, and 23, note the stencil layers of Kayama et al. includes apertures. Although Kayama et al. is silent with respect to how the apertures are manufactured, note that this claim language is a mode of manufacture limitation and since the stencil layers of Kayama et al. are capable of being manufactured by the processes recited, the teachings of Kayama et al. therefore meet the claim language as recited.

With respect to claim 12-13, note Kayama et al. teach a stencil in Figure 2 with two layers and a step down pocket, as broadly recited.

With respect to claim 21, note Kayama et al. teach a stencil in Figure 2 comprising an upper layer with a reservoir aperture and a lower contacting layer with at least one relief delivery aperture as broadly recited. Again, note that the stencil of Kayama et al. has all of the structural limitations recited and is broadly capable of being used in the manner recited and therefore meets the claim language.

With respect to claims 26-28, Kayama et al. teach a method for depositing surface mount materials (i.e., solder paste or balls) onto a surface comprising matching relief areas in a stencil with preexisting surface mount components on a surface (i.e., a printed circuit board), affixing the stencil to the surface, applying surface mount materials to the stencil such that the surface mount materials fill reservoir pockets in the stencil, and depositing surface mount materials onto the surface through delivery apertures on the

stencil, the delivery apertures drawing the surface mount materials from the reservoir pockets. Again, see the English language translation.

5. Claims 1-6, 8-9, 12-15, 17-18, 21, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Takahashi et al. (JP 3-92390). Takahashi et al. teach a stencil **1** for applying surface mount materials **6** comprising at least two layers **1a**, **1b**, **1c**, the two layers including at least one reservoir pocket **8** and at least one delivery aperture **5**, **7** for delivering the surface mount materials to a surface **14**. See Figures 1-2 and 4 and the English language abstract in particular.

With respect to claims 2, Takahashi et al. teach at least one relief area **4** for providing clearance for preexisting components on the surface.

With respect to claim 3, note the upper layer (**1a** or **1b**) has at least one reservoir pocket **8** and the lower layer (**1b** or **1c**) has at least one delivery aperture **7** and at least one relief area **4**.

With respect to claim 4, note the upper layer **1b** has at least one reservoir pocket **8** and at least one relief area **4** and the lower layer has at least one delivery aperture **7** and at least one relief area **4** as recited.

With respect to claim 5, note the stencil in Figure 2 has three layers including reservoir pockets **8**, relief areas **4**, and delivery apertures **7** as recited.

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With respect to claims 6, 9, 15, and 18, note the stencil of Takahashi et al. meets the structural limitations recited and is broadly “capable” of being used with the surfaces and surface mount materials recited and therefore meets the claim language as recited. Again note the above comments under the 35 USC 112 rejection.

With respect to claims 8, 17, and 23, note the stencil layers of Takahashi et al. includes apertures. Although it is not clear how the apertures are manufactured in Takahashi since the reference is not in the English language, note that this language is a mode of manufacture limitation and since the stencil layers of Takahashi et al. are capable of being manufactured by the processes recited, the teachings of Takahashi et al. therefore meet the claim language as recited.

With respect to claim 12-13, note Takahashi et al. teach a stencil in Figure 1 with two layers and a step down pocket, as broadly recited.

With respect to claim 14, Takahashi et al. teach a stencil **1** comprising an upper reservoir layer **1a** with at least one reservoir pocket **8**, a middle separation layer **1b** with at least one relief area **4** and at least one reservoir through pocket **8**, and a lower contacting layer **1c** with at least one delivery aperture **7** and at least one relief opening **4** as recited. See Figure 2 in particular.

With respect to claim 21, note Takahashi et al. teach a stencil **1** in Figures 1 and 2 comprising an upper layer with a reservoir aperture and a

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lower contacting layer with at least one relief delivery aperture as broadly recited. Again, note that the stencil of Takahashi et al. has all of the structural limitations recited and is broadly capable of being used in the manner recited and therefore meets the claim language.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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8. Claims 7, 16, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al. (JP 3-92390) in view of Hewett (US 6,096,131). Takahashi et al. teach a stencil as recited, with the possible exception of the stencil layers being formed of metal. Note that it is not clear what material the layers of Takahashi et al. are made of, since the reference is not in the English language. However, a multilayer stencil including individual metal layers is well known in the art, as exemplified by Hewett in Figures 2A-3B and column 2, lines 6-7. In view of this teaching, it would have been obvious to one of ordinary skill in the art to make the different layers of the stencil of Takahashi et al. out of metal as taught by Hewett, as it would simply require the obvious selection of a known material based upon its known properties to provide a multi-layer stencil that has improved surface properties.

9. Claims 10, 19, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over either of Takahashi et al. or Kayama et al. in view of Chan et al. (US 6,047,637). Each of Takahashi et al. and Kayama et al. teach a stencil as recited with the possible exception of the stencil layers being attached to one another by a dry-mount aqueous solder mask laminate. Note that Kayama et al. teach the two layers are affixed together with adhesion in paragraph 0022 of the English language translation and Takahashi et al. teach the layers are laminates in the English language abstract. Although neither reference specifically teaches the use of a dry-mount aqueous solder mask laminate, note

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that Chan et al. teaches a multilayer solder mask in which the layers are produced by dry-film lamination is well known in the art, in column 3, lines 13-23. In view of this teaching, it would have been obvious to one of ordinary skill in the art to attach the multilayer stencils of Takahashi et al. or Kayama et al. using dry-mount laminate as taught by Chan et al., as it would simply require the obvious substitution of one known laminate material for another to provide better fixing of the stencil layers to one another.

10. Claims 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 7-323675 in view of Takahashi et al. (JP 3-92390). JP 7-323675 teach a method for depositing surface mount materials onto a surface comprising matching relief areas in a stencil with preexisting surface components on a surface, affixing the stencil to the surface, and applying surface mount materials to the stencil to fill reservoir pockets in the stencil. JP '675 fails to teach the surface mount materials are deposited on the surface through delivery apertures which draw the surface mount materials from the reservoir pockets. Takahashi et al. teach a method of depositing materials to a surface including using a multi-layer stencil including reservoir pockets and delivery apertures to draw the material from the reservoir pockets to deposit it on the surface. In view of this teaching, it would have been obvious to one of ordinary skill in the art to use the multi-layer stencil assembly as taught by Takahashi et al. in the process of JP '675, as it would simply require the obvious

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substitution of one known stencil structure for another, to provide more precise delivery of the surface material to the surface.

With respect to claims 27-28, note that JP '675 teach the surface is a circuit board and the surface material is solder in the English language abstract.

Allowable Subject Matter

11. Claims 11, 20 and 25 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record fails to teach or fairly suggest a stencil including all of the structure as recited, in combination with and particularly including, the upper layer and lower layer being aligned by means of at least one registration pin and at least one registration hole.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Sanyal et al. (US 4,872,261), Golay (US 2,829,460), Shiba (JP 8-281905), JP 10-286936, and Short (GB 1 321 743) each teach a

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stencil and method for depositing material having obvious similarities to the claimed subject matter.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Leslie J. Evanisko** whose telephone number is **(703) 308-0786**. The examiner can normally be reached on M-Th 7:30 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew H. Hirshfeld can be reached on (703) 305-6619. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Leslie J. Evanisko
Leslie J. Evanisko
Primary Examiner
Art Unit 2854

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June 16, 2003